

REMARKS

This is in response to the Advisory Action dated June 4, 2004 for the above identified case. Entry of the above amendment is respectfully requested in order to place the claims in condition for allowance or in better form for consideration on appeal.

It is noted that the Advisory Action states that applicants' reply has overcome the previous rejections (in the Final Office Action date February 24, 2004) under 35 USC 112, second paragraph, and therefore said rejections are withdrawn in view of applicants' amendment.

The Advisory Action stated that the amendment filed on May 24, 2004 was entered because it appeared to simplify the issues for appeal but that claim 16 is awkwardly written. In particular the Examiner noted that in claim 16 the preamble states "A method for preventing breakdown by overcharge to an electrochemical breakdown voltage in an electrochemical cell comprising a lithium manganese oxide cathode active material, an anode, and an electrolyte solvent". The Advisory Action states said preamble is awkwardly written because it is unclear what breakdown the method is preventing. The Examiner further stated that the previous version of claim 16 recites "A method for preventing breakdown of a lithium metal oxide cathode active material in an electrochemical cell by overcharge to an electrochemical breakdown voltage." The Examiner states that she is interpreting claim 16 as a method for preventing breakdown of a cathode active material by overcharge to an electrochemical breakdown voltage in an electrochemical cell comprising a lithium manganese cathode active material, an anode and an electrolyte solvent.

In response thereto, applicants are respectfully requesting entry of the above amendment to reflect what applicants intended to express and claim and which correlates to the Examiner's interpretation of the claim. Applicants appreciate the Examiner pointing out the lack of clarity of applicants' amended claim 16. Applicants respectfully request entry of the above amendment to place the claim in condition for allowance or in better condition for consideration on appeal. It is respectfully submitted, that with entry of the above amendment, the claim more clearly defines that the breakdown that is prevented by the method of the claim, is the breakdown of the cathode active material in the electrochemical cell.

In the Advisory Action the Examiner has stated that claim 16 remains rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Kita et al. for the reasons given in paragraph 6 of the previous final Office Action. The Examiner noted that as stated in the previous final Office Action that Kita et al. disclose an electrochemical cell having an electrolyte comprising a solute, a solvent and an additive, where the solute can be LiClO_4 , LiAsF_6 , or LiPF_6 , and the additive can be trialkylamine in combination with a dialkylamide such as N,N -dimethylacetamide and the electrochemical cell can be Li/MnO_2 such that LiMnO_2 is formed during cycling of the electrochemical cell.

The Advisory Action correctly notes that applicants' main argument in the amendment filed on May 24, 2004 is that Kita does not anticipate the present invention because Kita et al. do not disclose, suggest or teach, specifically or inherently, the lithium manganese oxide material of the present invention. The Examiner noted that applicants' statement contradicts applicants' statement on page 6 that on cycling such cell of Kita would form Li_xMnO_2 and that such material is structurally dissimilar to the lithium ion cathode material LiMnO_2 (spinel).

In response to applicants' assertions the Examiner has pointed out that the Li_xMnO_2 formed by the cycling of the Kita et al. battery is a lithium manganese oxide material as claimed in claim 16. Claim 16 recites "lithium manganese oxide cathode active material" and does not recite " LiMnO_2 (spinel)". The Examiner has noted that applicants are arguing a feature that is not claimed. The Advisory Action further notes that during the cycling of the Kita et al. battery when $x=1$ the formula becomes LiMnO_2 which is identical to the material that applicant asserts is the present invention that is not claimed. The Examiner noted however, that the LiMnO_2 of Kita does not appear to have a spinel structures as asserted by applicants.

Applicants again respectfully request entry of the above amendment. If applicants' amendment is entered the claim will more clearly define the invention and put the claim in condition for allowance or in better condition for consideration on appeal. With entry of the above amendment applicants' claims are directed to a lithium manganese oxide cathode active material with a spinel structure. Upon entry of the above amendment applicants respectfully request reconsideration of the arguments presented in the amendment submitted May 24, 2004 with regard to the patentability of claim 16. The applicants' arguments are resubmitted herein.

Claim 16 is rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Kita et al. (U.S. Pat. No. 5,085,954). Applicants respectfully submit that Kita et al. does not anticipate or make obvious the subject matter of claim 16 as amended. Claim 16 as amended is a combination of previous claims 13 and 16 and also makes amendments to correct for the lack of antecedent basis of certain limitations.

Claim 16 as amended is directed to the use of the additive DMAC to an electrochemical cell comprised of a lithium manganese oxide (spinel) as the cathode active material. It is respectfully submitted that Kita et al. have made electrochemical cells using non-lithium

containing materials for the cathode. Even in the Kita specification at column 4, lines 22-25, the majority of the examples of cathode active materials are non-lithium containing metal oxides. The one exception is LiCoO_2 . Claim 16 as amended is specifically directed to an electrochemical cell with lithium manganese oxide (spinel) as the cathode active material. It is respectfully submitted that Kita et al. do not disclose, teach or suggest that DMAC could be added as an additive to the electrolyte solution of an electrochemical cell comprised of a lithium containing cathode material to successfully absorb excess charge energy and to prevent breakdown of lithium manganese oxide (spinel).

The Office Action states that the Li anode/ MnO_2 cathode cell would form LiMnO_2 during cycling of the cell. However, applicants respectfully submit that on cycling of such cell Li_xMnO_2 is actually formed. Such material is structurally dissimilar to the lithium ion cathode material LiMnO_2 (spinel) of the present invention.

Therefore applicants respectfully submit that Kita does not anticipate the present invention under 35 USC 102 because Kita et al. do not disclose, suggest or teach, specifically or inherently, the lithium manganese oxide (spinel) cathode active material of the present invention. It is further respectfully submitted that Kita et al. does not make obvious the present invention under 35 USC 103 as Kita et al. do not teach, disclose or suggest, specifically or inherently, the lithium manganese oxide (spinel) cathode material of the present invention. Furthermore, Kita et al. do not teach, disclose or suggest that one with skill in the art could add DMAC, as an additive to an electrolyte solution of an electrochemical cell having a lithium manganese oxide cathode (spinel) material, to successfully prevent breakdown of the lithium manganese oxide (spinel) and to absorb excess charge energy at a voltage less than the breakdown voltage of the cathode active material.

Applicants respectfully submit therefore, that the Kita reference does not anticipate or make obvious the claim 16 as amended. It is therefore respectfully submitted that the rejection of claim 16 under 35 USC 102(e) as anticipated by or, in the alternative under 35 USC 103(a) as obvious in view of Kita, has been overcome and should be withdrawn in view of the above amendment and these remarks.

Entry of the above amendment is respectfully requested. Reconsideration of the amended claim in the instant case for allowance is respectfully requested in view of the above amendment and these remarks. It is respectfully submitted that claim 16 as amended is allowable and passage of the application and claim to issue is respectfully requested.

Respectfully submitted,

Dated: June 22, 2004

By: Cynthia S. Kovacevic
Cynthia S. Kovacevic
Reg. No. 35,578
Attorney for Applicants

VALENCE TECHNOLOGY, INC.
301 Conestoga Way
Henderson, NV 89015
(702) 558-1000